



RAILROAD COMMISSION OF TEXAS

OFFICE OF GENERAL COUNSEL

RULE 37 CASE NO. 0269353
District 05

**APPLICATION OF CHESAPEAKE OPERATING INC., FOR A RULE 37 EXCEPTION
FOR THE GREENBRIAR LEASE, WELL NO. 3H, NEWARK, EAST (BARNETT SHALE)
FIELD, TARRANT COUNTY, TEXAS**

APPEARANCES:

FOR APPLICANT:

Glenn E. Johnson
Ray Oujesky
Bill G. Spencer
Steve Mills
Alan Jackson
David C. Triana

APPLICANT:

Chesapeake Operating Inc.

FOR PROTESTANTS:

Rodney Patterson

PROTESTANTS:

Wendell Kent Lain¹

PROPOSAL FOR DECISION

PROCEDURAL HISTORY

DATE APPLICATION FILED:	February 11, 2011
DATE OF NOTICE OF HEARING:	March 18, 2011
REQUEST FOR CONTINUANCE:	March 25, 2011
RULING ON CONTINUANCE:	March 28, 2011
RESCHEDULED/AMENDED	
DATE OF NOTICE OF HEARING:	April 4, 2011
DATE OF HEARING:	May 5, 2011

¹ Mr. Lain was not present at the hearing, but was represented by an attorney, Mr. Rodney Patterson. Mr. Lain had requested a telephonic appearance for the hearing, but after Chesapeake offered conditions that Mr. Lain saw as burdensome, the parties could not come to an agreement on terms. The examiner ruled, therefore, that there could be no telephonic appearance according to the Commission's General Rules of Practice and Procedure §1.130.

HEARD BY:

Christopher S. Hotchkiss, Hearings
Examiner
Andres J. Trevino, Technical Examiner

DATE PFD CIRCULATED:

June 17, 2011

STATEMENT OF THE CASE

Chesapeake Operating Inc. ("Chesapeake") seeks an amended drilling permit pursuant to the provisions of Statewide Rule 37 for the Greenbriar Lease, Well No. 3H, a proposed horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas. The well has been drilled, but not completed.

Appendix 1 to this proposal for decision is a copy of Chesapeake Exhibit No. 1 which is a plat showing the 347.766-acre Greenbriar Unit (337.605 leased acres), proposed Well No. 3H, the leased and participating tracts within the Unit, and the unleased tracts within the Unit. The surface location of the proposed well is off the Greenbriar Unit to the southeast 1,413 feet from the east line and 935 feet from the south line of the Hernandez, G., A-753, in Tarrant County. The penetration point for the proposed well is 271 feet from the east line and 1,951 feet from the north line of the Greenbriar Unit. The terminus of the proposed well is 453 feet from the northwest line and 308 feet from the north line of the Greenbriar Unit and 1,470 feet from the south line and 2,671 feet from the east line of the Hernandez, G., A-753, Tarrant County

Special field rules for the Newark, East (Barnett Shale) Field provide for 330 foot lease line spacing. A Rule 37 exception is needed for the proposed Greenbriar Unit, Well No. 3H because the section of the well proposed to be perforated is closer than 330 feet to the boundary of certain tracts internal to the Unit that are unleased. The application is opposed by an owner of three unleased tracts which are all within 330 feet from the section of Well No. 3H proposed to be perforated. A hearing was held on May 5, 2011, at which Chesapeake and the protestant appeared and presented evidence. The examiners recommend that the application be approved.

DISCUSSION OF THE EVIDENCE

Chesapeake Operating Inc.

As stated above, special field rules for the Newark, East (Barnett Shale) Field provide for 330' lease line spacing. As to horizontal wells, where the horizontal portion of the well is cased and cemented back above the top of the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the distance to the nearest perforation in the well, and not based on the penetration point or terminus. Where an external casing packer is placed in a horizontal well and cement is pumped above the external casing packer to a depth above the top of

the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the top of the external casing packer or the closest open hole section in the Barnett Shale. The standard drilling and proration unit for the Newark, East (Barnett Shale) Field is 320 acres. An operator is permitted to form optional drilling units of 20 acres. Chesapeake Exhibit No. 1 (Appendix 1 to this proposal for decision) is a plat showing the Greenbriar Unit, the pathway of the proposed Well No. 3H, the tracts within the Unit that are leased or participating tracts, and the tracts within the Unit that are unleased. The proposed wellbore path generally mimics the flow of the southern edge of Interstate Highway 20. The unleased tracts are dispersed throughout the Unit. In addition, Chesapeake offered to lease from owners of all of the unleased tracts, including the protestant. Both parties acknowledged hours in lease negotiations and discussion. Further, even though a point of contention between the parties is exactly how much interest Mr. Lain has in the three tracts, Chesapeake noted several times that it "offered to lease whatever Mr. Lain has."²

At the time of filing of Chesapeake's Form W-1 application, Chesapeake had 333.311 acres under lease within the boundaries of the Greenbriar Unit. Since that time, additional acreage has been leased within the unit. The Chesapeake Exhibit No. 1 plat in Appendix 1 to this proposal for decision depicts the expanded unit, as it existed as of the date of the hearing. There are 347.766 acres within the perimeter of the unit, of which 337.605 acres, as of the hearing date, are under lease to Chesapeake and pooled into the unit. The Appendix 1 plat shows the boundary of the unit and the boundaries of separate tracts within the perimeter of the unit. Unleased tracts within the perimeter of the unit are shaded grey on the plat, and the three unleased tracts in which the protestant has an interest are located approximately in the middle of the Unit, and are indicated with small circles reading 507, 508, and 509. The surface of the Unit itself is occupied by mixed uses, but is heavily residential.

A geologist employed by Chesapeake presented a structure/isopach map of the Barnett Shale and a two well structural cross section in the area of the Greenbriar Unit. The Barnett Shale is about 350 feet thick in this area. According to Chesapeake's geologist, the Barnett Shale is present and productive throughout the area of the Greenbriar Unit.

A reservoir engineer employed by Chesapeake performed a study of Barnett Shale wells within four miles of the proposed Greenbriar Unit, Well No. 3H. There are 50 Barnett Shale wells within this four-mile radius. Estimated ultimate recoveries ("EUR") were calculated for these wells by decline curve and data was also compiled regarding the perforated lateral length of each well. From this information, a cross-plot of EUR versus drainhole length was generated and a computer generated least squares regression of the data points on the plot developed a line through the data points with a positive slope of 1.0161 and an intercept of 263.11. The implication of this study is that a vertical well would have an EUR of 263.11 MMCF of gas and that as the drainhole length of

² At hearing, both parties refrained from revealing details about the offers, but Chesapeake simply called the offer "substantial."

a horizontal well increases, the well's EUR also increases. According to this study, every additional foot of horizontal drainhole ultimately will recover 1.0161 MMCF of gas.

Due to the size and configuration of the Greenbriar Unit and the location of tracts internal to the Unit that have unleased interests, there appears to be a no less irregular location on the Unit on which a more productive well could be drilled. A vertical well could not be drilled at a surface location on the Greenbriar Unit due to intensive surface development and restrictions in Chesapeake's oil and gas leases.

On the Appendix 1 plat, a 330-foot "bubble" is drawn around the wellbore path, from 330 feet east of the first proposed perforation point to 330 west of the final proposed perforation point. All leased tracts as of April 26, 2011 are not affirmatively indicated on the plat - in other words, they are not outlined, and are shown in white. All unleased tracts, however, are shaded in grey and numbered with tract numbers, which correspond to the tract numbers on pages 2-5 of the Appendix 1 plat. The Appendix 1 plat also shows existing Well No. 2H which has been drilled east-to-west in the middle to upper portion of the Unit, and permitted³ Well No. 1H, which is to be drilled also in an east-to-west direction from the same surface location as Well No. 2H, which lies just east of the northeastern "handle" of the Unit. There are approximately nine unleased tracts within the perimeter of the Unit that are closer than 330' to the section of proposed Well No. 3H that will be perforated. The surface location is off-Unit, and is located to the east and south of the Well No. 3H wellbore path. An off-lease surface location is necessary because the surface usage of the acreage within the perimeter of the Unit is primarily residential.

Chesapeake's reservoir engineer also presented an estimate of current recoverable gas in the Newark, East (Barnett Shale) Field beneath the Greenbriar Unit based on a traditional volumetric calculation prepared by the engineer. The engineer's study developed a total gas-in-place calculation of 66.568 BCF. This figure is comprised of both free gas-in-place (42.656 BCF), and adsorbed gas-in-place (23.912 BCF). Assuming a 30% recovery factor, Chesapeake's reservoir engineer estimated recoverable gas-in-place to be 19.970 BCF. After excluding the expected ultimate recovery from the other two existing wells in the Unit (10.394 BCF [4,895 MMCF for the 1H, and 5,499 MMCF for the 2H]), Chesapeake's reservoir engineer testified that an additional well(s) is/are necessary to recover the remaining 9.576 BCF of gas. It was not clear from the evidence whether Chesapeake intends to apply for another drilling permit for the Greenbriar Unit.

The proposed Greenbriar Unit, Well No. 3H will have a perforated lateral length of 4,308 feet, if the Rule 37 exception is granted. Assuming, as predicted by Chesapeake's plot of EUR versus perforated lateral length, this well will recover 263.11 MMCF plus 1.0161 MMCF for every foot of perforated lateral, the well will recover about 4.64 BCF of the remaining 9.576 BCF of gas in place beneath the Greenbriar Unit. Chesapeake asserts that approval of a Rule 37 exception for the

³ According to Chesapeake, since the submission of the amended W-1, this well has since been drilled, completed, and has started to produce.

proposed Greenbriar Unit, Well No. 3H is necessary to prevent confiscation, that is, to provide Chesapeake with an opportunity to recover its fair share of gas, measured by the current recoverable reserves beneath the Unit.

Protestant Wendell Kent Lain

Mr. Lain appeared through his attorney, but was not present at the hearing. Mr. Lain is the owner of three unleased tracts within 330 feet of the proposed Greenbriar Unit, Well No. 3H drainhole. Mr. Lain's attorney questioned Chesapeake's witnesses, and offered evidence.

Mr. Lain believes that Chesapeake's case is not ripe for resolution before the Commission chiefly for the reason that he and Chesapeake disagree as to the extent of Mr. Lain's interest in the tracts that he owns. In his case in chief, Mr. Lain entered into evidence warranty deeds for all three tracts owned by Mr. Lain, and a copy of a Texas Department of Highways "Plan of Proposed Right of Way Project" dated September 28, 1993. Mr. Lain asserts that the project was a major overhaul of Interstate 20, and the state "took" land that abutted the highway by shearing off parts of those lots to accommodate a new service road. Further, Mr. Lain believes that the state did not reserve the minerals for that "taken" land, and therefore, Mr. Lain believes that he still owns the underlying minerals for that "taken" land.

Mr. Lain believes that Chesapeake needs to properly measure the recoverable gas beneath Mr. Lain's actual tracts to come up with a proper figure for confiscation. Mr. Lain's case rests on the presumption that if Mr. Lain correctly asserts that he has mineral holdings to the middle of the highway, as proffered, that Chesapeake did not effectively prove a need or a measurement of any waste amount that relates specifically to Mr. Lain's property. Mr. Lain questioned Chesapeake's reservoir engineer whether the calculations he had made regarding the confiscation figures included the extra 60 or so feet that Mr. Lain claims he owns.

EXAMINERS' OPINION

An owner of oil and gas is entitled to a reasonable opportunity to recover the remaining recoverable hydrocarbons underlying his tract, and any denial of that opportunity amounts to confiscation. *Atlantic Refining Co. v. Railroad Commission*, 346 S.W.2d 801 (Tex. 1961); *Imperial American Resources Fund, Inc. v. Railroad Commission*, 557 S.W.2d 280 (Tex. 1977). When the subject tract is capable of supporting a regular location, the applicant for a Rule 37 exception based on confiscation must prove that the proposed irregular location is necessary because of surface or subsurface conditions and that the proposed location is reasonable. To do this, the applicant must show that it is not feasible to recover its fair share of hydrocarbons from regular locations.

The examiners are of the opinion that Chesapeake proved that the requested Rule 37 exception is necessary to prevent confiscation. Proposed Well No. 3H is the third well on the

347.766-acre Greenbriar Unit. Gas-in-place beneath the entire Greenbriar Unit is about 66.568 BCF. The fair share of gas of Chesapeake and its lessors is measured by the current recoverable gas beneath the Unit. Assuming a recovery factor of 30%, the current recoverable gas beneath the Unit is about 19.970 BCF.

Assuming that the proposed Greenbriar Unit, Well No. 3H will recover 263.11 MMCF plus 1.0161 MMCF for every foot of perforated lateral, as predicted by Chesapeake's plot of EUR versus perforated lateral length for 50 Barnett Shale wells within a four-mile area, the well will recover about 4.64 BCF of the 19.970 BCF of gas-in-place beneath the Greenbriar Unit. There are two other wells on the Unit, Well Nos. 1H and 2H. Chesapeake argued that the expected EUR for the Greenbriar 1H would be approximately 4.895 BCF, and for the Greenbriar 2H, it would be approximately 5.499 BCF. Together, the total gas expected from the existing wellbores would be 10.394 BCF. Therefore, additional wells are needed to recover the remaining 9.576 BCF of recoverable gas (19.970 BCF *minus* 10.394 BCF). The proposed Greenbriar Unit Well No. 3H is necessary to provide Chesapeake and its lessors with a reasonable opportunity to recover their fair share of gas, and, given the existing wells and the location of unleased tracts, no alternative regular location will provide the same, or as good as, an opportunity.

The examiners have considered the correlative rights of the protestant in his unleased tracts, but these rights must be weighed against the correlative rights of Chesapeake and the hundreds of its lessors that have been pooled into the Greenbriar Unit. Chesapeake made an attempt to lease all of the protestant's tracts, and the evidence suggests that the only reason the protestant's interests are not leased is the disagreement as to the size of Mr. Lain's properties' mineral interest. The Commission is without authority to determine title to property, or dictate to the parties the terms on which mineral interests must be leased, but Chesapeake has stated its continued willingness to lease whatever mineral interest Mr. Lain possesses. It appears that Mr. Lain's remedy does not reside with the Commission. Additionally, because of the distance between the protestant's tracts and the boundary of the 330-foot "bubble", on which the tracts essentially lay, any drainage would likely occur at a minimum. Even if and/or when Mr. Lain and Chesapeake have their differences regarding the mineral interests of Mr. Lain's property adjudicated by a proper tribunal, it still is only marginally related to this Rule 37 exception. Chesapeake has demonstrated that confiscation of gas belonging to Chesapeake and its lessors will occur unless the exception is granted.

There appears to be no combination of short horizontal or vertical wells that would result in the recovery of Chesapeake's fair share of gas beneath the Unit. In fact, if Chesapeake is not granted the Rule 37 exception, the drainhole available for completion would be only 1,270 feet in length, which would only recover approximately 1.554 BCF of gas. Conversely, allowing Chesapeake the full drainhole length of 4,308 feet would result in a possible recovery of 4.64 BCF. Not granting the exception would reduce the recovery of Chesapeake and its lessors by 3.086 BCF.

The examiners have concluded that the location of the proposed Greenbriar Unit, Well No. 3H is reasonable. This location is a continuation of Chesapeake's plan to effectively and efficiently recover gas from the Unit, and there appears to be no less irregular location in relationship to the unleased tracts that are internal to the Unit. Accordingly, the examiners recommend that the

Chesapeake application be approved. Based on the evidence in the record in this docket, the examiners recommend adoption of the following Findings of Fact and Conclusions of Law.

FINDINGS OF FACT

1. At least ten (10) days notice of this hearing was provided to all affected persons as defined by Statewide Rule 37(a)(2) and 37(a)(3) and the special field rules for the Newark, East (Barnett Shale) Field.
2. Chesapeake Energy, Inc. ("Chesapeake") seeks an amended drilling permit pursuant to the provisions of Statewide Rule 37 for the Greenbriar Unit, Well No. 3H, a proposed horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas.
3. Special field rules for the Newark, East (Barnett Shale) Field provide for 330' lease line spacing. As to horizontal wells, where the horizontal portion of the well is cased and cemented back above the top of the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the distance to the nearest perforation in the well, and not based on the penetration point or terminus. Where an external casing packer is placed in a horizontal well and cement is pumped above the external casing packer to a depth above the top of the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the top of the external casing packer or the closest open hole section in the Barnett Shale. The standard drilling and proration Unit for the Newark, East (Barnett Shale) Field is 320 acres. An operator is permitted to form optional drilling Units of 20 acres.
4. The surface location of the proposed well is off the Greenbriar Unit to the southeast 1,439 feet from the east line and 935 feet from the south line of the Hernandez, G., A-753, in Tarrant County. The penetration point for the proposed well is 271 feet from the east line and 1,951 feet from the north line of the Greenbriar Unit. The terminus of the proposed well is 453 feet from the northwest line and 308 feet from the north line of the Greenbriar Unit and 1,470 feet from the south line and 2,671 feet from the east line of the Hernandez, G., A-753, in Tarrant County. Appendix 1 to this proposal for decision, incorporated into this finding by reference, is a plat showing the 347.766-acre Greenbriar Unit, proposed Well No. 3H, the leased and participating tracts within the Unit, and the unleased tracts within the Unit.
5. The off-Unit surface location shown on Appendix 1 to this proposal for decision is an appropriate surface location available to Chesapeake for the drilling of a well on the Greenbriar Unit. A surface location on the Unit itself is precluded by surface development and by restrictions in Chesapeake's oil and gas leases.
6. A Rule 37 exception is needed for the proposed Greenbriar Unit, Well No. 3H because the section of the well proposed to be perforated is closer than 330 feet to the external Unit boundary and the boundary of certain tracts internal to the Unit that are unleased.

7. There was no evidence that the original gas-in-place beneath the Greenbriar Unit has been drained by wells are adjacent tracts.
8. The recoverable gas in place beneath the Greenbriar Unit is 19.97 BCF.
9. The two existing wells on the Greenbriar Unit will ultimately recover approximately 10.394 BCF of gas, leaving approximately 9.5 BCF unrecovered without any additional wells.
10. The Chesapeake application is opposed by an owner of three contiguous unleased tracts internal to the Greenbriar Unit represented by the protestant to be closer than 330 feet to the drainhole of the proposed well. Chesapeake made an attempt to lease the protestant's tracts, but was unsuccessful. Chesapeake appears to remain willing to lease these tracts if protestant will agree. The protestant's tracts are approximately 300 feet from the proposed wellbore path.
11. The Barnett Shale is about 350 feet thick in this area and is present and productive throughout the area of the Greenbriar Unit.
12. Barnett Shale gas wells within five miles of the pad site of the proposed Greenbriar Unit, Well No. 3H recover an average of 263.11 MMCF of gas plus 1.0161 MMCF per foot of horizontal drainhole.
 - a. Chesapeake studied production data, effective drainhole length, and decline curves to develop estimated ultimate recoveries for 50 Barnett Shale gas wells within four miles of the pad site for proposed Well No. 1H.
 - b. Chesapeake generated a plot of estimated ultimate recovery versus drainhole length for the 50 study wells. A computer generated least squares regression of the data points on the plot developed a line through the data points with a positive slope of 1.0161 and an intercept of 263.11.
 - c. The implication of Chesapeake's study is that a vertical well in the area will have an estimated ultimate recovery of 263.11 MMCF of gas, and a horizontal well ultimately will recover 263.11 MMCF plus 1.0161 MMCF for every foot of drainhole.
13. Due to the size and configuration of the Greenbriar Unit and the location of tracts internal to the Unit that have unleased interests, there is no regular location on the Unit, 330 feet or more away from surrounding mineral property lines, where a feasible horizontal well might be drilled. A vertical well could not be drilled at a surface location on the Greenbriar Unit due to intensive surface development and restrictions in Chesapeake's oil and gas leases.
14. The proposed Greenbriar Unit, Well No. 1H will have perforated lateral length of 4,308 feet.

Assuming, as predicted by Chesapeake's plot of EUR versus perforated lateral length, this well will recover 263.11 MMCF plus 1.0161 MMCF for every foot of perforated lateral, the well will recover about 4.64 BCF.

15. Drilling of the Greenbriar Unit, Well No. 3H at the location proposed by Chesapeake is necessary to provide Chesapeake and its lessors with an opportunity to recover their fair share of gas from the reservoir.
16. The proposed location of the Greenbriar Unit, Well No. 1H is reasonable. There is no less irregular location in relationship to the unleased tracts that are internal to the Greenbriar Unit. The proposed well is approximately 300 feet from the protestant's tracts, and any drainage of those tracts will be minimized by the proposed location.

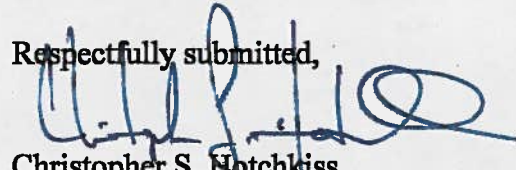
CONCLUSIONS OF LAW


1. Proper notice of hearing was timely issued by the Railroad Commission to appropriate persons legally entitled to notice.
2. All things necessary to the Commission attaining jurisdiction over the subject matter and the parties in this hearing have been performed.
3. Approval of a Rule 37 exception for the Greenbriar Unit, Well No. 3H as proposed by Chesapeake Energy, Inc., is necessary to prevent confiscation and protect the correlative rights of mineral owners.

RECOMMENDATION

The examiners recommend that the application of Chesapeake Energy, Inc., for a Rule 37 exception for the Greenbriar Unit, Well No. 3H in the Newark, East (Barnett Shale) Field, Tarrant County, Texas, be granted as necessary to prevent confiscation and protect correlative rights.

Respectfully submitted,


Christopher S. Notchkiss
Hearings Examiner


Andres J. Trevino
Technical Examiner